

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

23 SEP 2004

Applicant's or agent's file reference 2002P84041WO	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB 03/01321	International filing date (day/month/year) 27.03.2003	Priority date (day/month/year) 27.03.2002
International Patent Classification (IPC) or both national classification and IPC F01D5/18		
Applicant ALSTOM (SWITZERLAND) LTD		

<p>1. This International preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>
<p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 24.10.2003	Date of completion of this report 12.07.2004
Name and mailing address of the International preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer de Rooij, M Telephone No. +31 70 340-2306



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II. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-5 as originally filed

Claims, Numbers

1-8 as originally filed

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

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5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-8
	No: Claims	
Inventive step (IS)	Yes: Claims	5,8
	No: Claims	1-4,6,7
Industrial applicability (IA)	Yes: Claims	1-8
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

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Re Item V

**Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step
or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: EP 0 990 771 A
D2: US 2 847 185 A
D3: EP 1 149 982 A

**2. The document D1 is regarded as being the closest prior art to the subject-matter of
claim 1, and discloses (the references in parentheses applying to this document):**

A turbine component comprising a hollow aerofoil (10), a chordwise extending rib (32) provided on the interior surface of the hollow aerofoil, and an impingement tube (34) within the aerofoil, the impingement tube (34) being formed as three separate sections (§0034 - §0036 e.g.: "individual baffles 34 may be discrete members", "the individual baffles are suitably stacked, with each baffle being separately retained in its respective seat 32") that extend spanwise through the aerofoil and have confronting ends that locate on the rib (32).

**3. Although the configuration described and shown in the current application differs
from the configuration in D1 in various aspects, the subject-matter of claim 1 differs only
in that the impingement tube is formed as two separate sections instead of three
separate sections.**

**4. The problem to be solved by the present invention may therefore be regarded as
simplification of the design of the impingement tube.**

**5. Decreasing the number of separate sections of the impingement tube comes within
the scope of the customary practice followed by persons skilled in the art, especially as
the advantages thus achieved can readily be foreseen. Consequently, the subject-
matter of claim 1 lacks an inventive step.**

6. The subject-matter of claim 1 can also not be regarded as inventive in view of the combination of documents D2 and D3.

6.1 Document D2 discloses (references in parentheses applying to this document):

A turbine component (14) comprising a hollow aerofoil (18) and an impingement tube within the airfoil, the impingement tube being formed as two separate sections (19, 20) that extend spanwise through the airfoil and have confronting ends.

6.2 The subject-matter of claim 1 differs from this in that the turbine component comprises a chordwise extending rib provided on the interior surface of the hollow aerofoil and that the two separate sections of the impingement tube have confronting ends that both locate on the rib.

6.3 The problem to be solved by the present invention may therefore be regarded as ensuring a proper positioning of the separate sections of the impingement tube.

6.4 The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reason:

A chordwise extending rib is described in document D3 as providing the same advantages as in the present application. The skilled person would therefore regard it as a normal option to include this feature in the turbine component described in document D2 in order to solve the problem posed.

7. Dependent claims 2-4, 6 and 7 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step, because these features are well known construction details in the field of turbines or obvious design possibilities. See e.g.:

- D1, fig. 2 for claims 2 and 3.
- D3, fig. 3 for claim 7.